

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following comments, is respectfully requested.

Claims 1-31 and 45-49 are presently active in this case, Claims 1, 26 and 45 amended, Claims 32-44 canceled and Claims 48-49 added by way of the present amendment.

In the outstanding Office Action, Claims 1, 4, 5-7 and 10-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 2002/0050246 to Parkhe in view of U.S. 5,775,416 to Heimanson et al.; Claims 13-20 and 26-31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parkhe in view of Heimanson et al., and in further view of U.S. 3,909,917 to Lebedev et al.; Claims 2, 3, 8 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parkhe in view of Heimanson et al., and in further view of U.S. 5,280,156 to Niori et al.; Claims 21-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parkhe in view of Heimanson et al. and Lebedev et al., and in further view of U.S. 5,280,156 to Niori et al.; Claim 12 was rejected under 35 U.S.C. 103(a) as being unpatentable over Parkhe in view of Heimanson et al., and further in view of U.S. 5,078,851 to Hishihata et al., and Claims 45-47 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parkhe in view of U.S. 6,051,074 to Strodtbeck et al. and U.S. 6,736,206 to Hisai.

First, Applicant wishes to thank Ms. Nuckols for the August 24, 2010 interview at which time the outstanding issues in this case were discussed. During the interview, Applicant presented amendments and arguments substantially as set forth in this response. While no agreement was reached, Examiner Nuckols indicated that the amendments appear to overcome the cited references, but further search and consideration is needed upon filing a Request for Continued Examination (RCE).

Turning now to the merits, in order to expedite issuance of a patent in this case, Applicant has amended the independent claims to clarify the present invention over the cited references. Specifically, amended Claim 1 recites a substrate holder including a supporting surface, a cooling component having a plurality of cooling channels configured to receive a cooling fluid and a heating component positioned adjacent to the supporting surface and between the supporting surface and the cooling component. Also recited is a fluid gap positioned between the cooling component and the heating component such that the fluid gap is interposed between the plurality of cooling channels of the cooling component and heating component. The fluid gap is configured to receive a fluid to vary the thermal conductance between the cooling component and the heating component. A brazing material is disposed at least along a peripheral region between the cooling component and the heating component such that the brazing material is disposed adjacent to the fluid gap and provides part of an enclosure which forms the fluid gap.

Thus, Claim 1 has been amended to clarify that the brazing material is disposed at least along a peripheral region between the cooling component and the heating component such that the brazing material is disposed adjacent to the fluid gap and provides part of an enclosure which forms the fluid gap. Claims 26 and 45 have been similarly amended to include these features. An example structure covering these features is shown in Figure 2 of Applicant's specification. As seen in this figure, the cooling component 60 includes channels 66, and a heating component 50 is provided on top of the assembled cooling component 60. Interposed between the heating and cooling components is a brazing material 84 (Fig. 3) for connecting these components, and a fluid gap 90 (Fig. 2) for receiving a fluid to change the thermal conductivity across the gap. As seen in Fig. 2, the brazing material is disposed at least along a peripheral region between the cooling component and the heating component such that the brazing material is disposed adjacent to the fluid gap and provides

part of an enclosure which forms the fluid gap. As best seen in Fig. 2, the fluid gap extends along several of the channels 66. Grooves 70 are also provided between the heating and cooling components in an effort to prevent the brazing material from entering the fluid gap area 90.

The primary reference to Parkhe discloses a process chamber having a temperature controlled substrate holder. As seen in Fig. 2A, the substrate holder includes a composite cooling plate 207 connected to an electrostatic chuck 105 provided on top of the cooling plate. Parkhe discloses that the electrostatic chuck can be connected to the cooling plate by brazing. However, as seen in Fig. 2B, the top plate 238 of the cooling plate is continuously connected to the transition layer 233 and bonding layer 232 without any gap there between. Thus, Parkhe does not disclose that there is a fluid gap between the cooling plate and the electrostatic chuck 105 (or heating plate). Further, in response to the Office Action's assertion, that a fluid gap may be inherent in the structure of Parkhe, Applicant submits that any such gap would not be configured to vary the thermal conductance as also required by the claims..

The secondary reference to Heimanson et al. discloses a sputtering apparatus having a cooling unit 34 and heating unit 24 mechanically clamped together to form a cavity 50. Thus, Heimanson et al. does not disclose use of brazing at all. Thus, even if combined, Parkhe and Heimanson do not disclose the brazing material is disposed at least along a peripheral region between the cooling component and the heating component such that the brazing material is disposed adjacent to the fluid gap and provides part of an enclosure which forms the fluid gap.

Moreover, Applicant submits that it would not be obvious for one of ordinary skill in the art to include the fluid gap of Heimanson et al. and a brazing material of Parkhe at the intersection of heating and cooling plates as required by the claims. As discussed in

Applicant's specification, such a gap could be filled with the brazing material. Thus, one of ordinary skill in the art would avoid providing a fluid gap near the brazing material. It is the present inventors who discovered that this combination can be achieved by use of a groove for preventing the flow of brazing material. The cited references do not render this discovery obvious.

Finally, the secondary references to Lebedev et al., Niori et al., Nishihata et al. and Strodtbeck et al. are not cited for any teaching of a fluid gap, and in fact cannot correct the deficiency of Parkhe.

For the reasons discussed above, independent Claims 1, 26 and 45 patentably define over the cited references. As the remaining examined claims depend from one of these independent claims, the remaining examined claims also patentably define over the cited references.

Consequently, it is respectfully submitted the outstanding objections and rejections have been addressed/overcome and should be withdrawn. Since it is believed no other issues remain in this case, a timely Notice of Allowance is respectfully requested. Should the Examiner disagree, the Examiner is encouraged to contact the undersigned to resolve any remaining issues.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.

A handwritten signature in dark ink, appearing to read 'E. Garlepp', is written over a horizontal line.

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